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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,489	08/29/2001	Paulo Sergio Bon	D-20,946	4838
27182	7590	12-16-2004	EXAMINER	
PRAXAIR, INC. LAW DEPARTMENT - M1 557 39 OLD RIDGEBURY ROAD DANBURY, CT 06810-5113			CHORBAJI, MONZER R	
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/940,489

Applicant(s)

BON ET AL.

Examiner

MONZER R CHORBAJI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

This final action is in response to the amendment received on 09/13/2004

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasting, Jr. et al (U.S.P.N. 5,368,815) in view of Cox et al (U.S.P.N. 5,431,939) and further in view of Ishida (JP 405277475A).

With respect to claim 1, the Kasting reference teaches a method for sanitizing (col.1, lines 6-9) including the following: injecting gaseous stream of ozone into steam of water (col.2, lines 36-40), feeding aqueous ozone into a tank (col.4, lines 19-22), which has a space above the liquid (figure 1, 12, inlet 14 and outlet 24 have space above them) such that ozone molecules in water would evaporate into the gas above the liquid and become ozone molecules in gaseous state, applying ozonated solution onto a surface (figure 2, 72 and 74), and recovering solution for recycling purposes (figure 2, 24). With respect to the added limitation "applying all of the aqueous solution of ozone", the Kasting reference teaches that valve 100 on the spray bar supply line 70 is closed and during operation is opened (col.7, lines 36-38 and lines 46-50). Also, the Kasting reference teaches that valve 102 on the diverted supply line 98 is open and during operation is closed. The Kasting reference recognizes the importance of maintaining the appropriate level of ozone in the water then it is up to a one having ordinary skill in the art to determine whether to operate the apparatus in diversion mode or in non diversion. When operated in non-diversion mode, then all of the ozonated water is applied from tank (12). In addition, the Kasting reference generates ozone from oxygen but does not specify the purity. However, with respect to claim 1, the Kasting reference fails to teach manufacturing ozone from oxygen with at least 90 volume percent and pH monitoring means. The Cox reference, which is in the art of treating surfaces using ozonated water,

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teaches manufacturing ozone from oxygen with at least 90 volume percent (col.24, lines 52-57). As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of the Kasting reference by substituting 99.5% pure oxygen for air since such a substitution is an obvious matter of choice of design evidenced by the Cox reference.

However, the Cox reference fails to disclose pH-monitoring means. The Ishida reference, which is in the art of treating fluids with ozone, teaches providing an aqueous solution with a pH range of 7 to 9 such that a pH monitoring means are utilized (abstract, lines 16-22). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method of the Kasting reference to include a pH monitoring means in order to improve ozone processing efficiency by ensuring that the pH value in an ozone reaction tower is controlled more stably than ever (JP 405277475A, abstract, lines 1-3).

With respect to claims 2, 4, and 7, the Kasting reference teaches the following: the source of water is a storage vessel (figure 2, 12), injecting ozone into water to achieve 1% to 15% w/w ozone, and having an ozonated water in the storage tank with a certain concentration range is a matter of routine experimentation depending on how much a surface needs to be sanitized, for example, a surface with a greater number of soil would require more concentrated ozonated water than a surface with less soil.

With respect to claim 3, the Ishida reference teaches a tank with a sensor for adjusting the pH by adding an alkaline material to the water (abstract, lines 16-21).

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5. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasting, Jr. et al (U.S.P.N. 5,368,815) in view of Cox et al (U.S.P.N. 5,431,939) and further in view of Ishida (JP 405277475A) and Silberzahn (U.S.P.N. 4,409,188).

With respect to claims 5-6, the Kasting reference, the Cox reference, and the Ishida reference all fail to teach the use of a vent in the tank and an ozone destroyer. However, the Silberzahn reference, which is in the art of sterilizing surfaces with ozonated water, teaches using a vent in the tank (figure 1, 39) and using an ozone destroyer (figure 1, 29, 10, 40, and col.5, lines 43-45). Thus, it would have been obvious to one having ordinary skill in the art to modify the method of the Kasting reference to include an ozone destroyer associated with a vent so that no harmful effects on the environment occur (Silberzahn, col.5, lines 44-45).

Response to Arguments

6. Applicant's arguments filed on 09/13/2004 have been fully considered but they are not persuasive.

On page 7 of the Remarks section, applicant argues that, "Kasting clearly requires not one but two lines, 90 and 98, by which ozonated solution that is withdrawn from his tank 12 is returned to tank without ever being applied to articles being sanitized." The Kasting reference teaches that valve 100 on the spray bar supply line 70 is closed and during operation is opened (col.7, lines 36-38 and lines 46-50). Also, the Kasting reference teaches that valve 102 on the diverted supply line 98 is open and during operation is closed. The Kasting reference recognizes the importance of maintaining the appropriate level of ozone in the water then it is up to a one having

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ordinary skill in the art to determine whether to operate the apparatus in diversion mode or in non diversion. When operated in non-diversion mode, then all of the ozonated water is applied from tank (12). Furthermore, since the Kasting reference recognizes the importance of maintaining the proper ozone concentration in water, valve 94 on line 90, which is a metering valve, is inherently capable of being closed for maintaining concentration or pressure within the system. It is obvious from the above discussion that the system of the Kasting reference is capable of operating in two modes.

The examiner recognizes that figure 1, shows a dissolved ozone sensor 11 and a dissolved ozone monitor 22 on return line 111. In addition, the specification on page 11, paragraph 0037, teaches a feedback mechanism that shows producing fresh ozone depends on how much ozone is recycled into return line 111. It is obvious that the invention teaches using return line 111.

On page 7 of the Remarks section applicant argues that, "Indeed, neither Cox nor Ishida contains any disclosure relating to preparing and applying aqueous sanitizing solutions of ozone." Both the Cox reference and the Ishida reference are in the art of disinfecting surfaces by applying ozone. The Cox reference is applied only for showing that using high purity oxygen as a source for generating ozone gas is known. In the instant application, ozone gas is generated as well. The Ishida reference is applied only for showing that using a pH monitor is known in the art of injecting ozone gas into fluids for treatment purposes. In the instant application, ozone gas is injected into water. With respect to preparing aqueous sanitizing solutions of ozone, the Kasting reference teaches such a concept not the Cox or the Ishida references.

On page 8 of the Remarks section applicant argues that, "Anyone who contemplates combining Kasting with Cox would have to omit the solution forming step, so as to administer ozone as a gas, which is what Cox discloses." As mentioned above, the Cox reference is applied only for showing that using high purity oxygen as a source for generating ozone gas is known and not for applying ozone in gaseous state such that one of ordinary skill in the art would substitute 99.5% pure oxygen for air in the Kasting reference since such a substitution is an obvious matter of choice of design evidenced by the Cox reference.

On page 8 of the Remarks section applicant argues that, "Applicant's use of high purity oxygen facilitates dissolving higher amounts of ozone into the aqueous stream- yet Cox discloses converting only part of the oxygen feed into ozone, thereby teaching away from any relevance to forming high-concentration aqueous solutions of ozone." Oxygen is partially reacted to provide a small ozone concentration as shown in col.24, lines 54-55. Thus, depending on the concentration of ozone generated, reacting oxygen partially or completely is within the scope of the artisan and does not constitute a teaching away.

On page 9 of the Remarks section, applicant argues that, "Applicants on the other hand, disclose that they are interested in forming an aqueous solution of ozone having significant amounts of ozone dissolved therein- which Ishida teaches away." Again, The Ishida reference is applied only for showing that using a pH monitor is known in the art of injecting ozone gas into fluids for treatment purposes and not for the amount of ozone dissolved. So, one of ordinary skill in the art would modify the method

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of the Kasting reference to include a pH monitoring means in order to improve ozone processing efficiency by ensuring that the pH value in an ozone reaction tower is controlled more stably than ever (JP 405277475A, abstract, lines 1-3). With respect to preparing aqueous sanitizing solutions of ozone, the Kasting reference teaches such a concept not the Ishida reference.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
8. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MONZER R CHORBAJI** whose telephone number is (571) 272-1271. The examiner can normally be reached on M-F 6:30-3:00.

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10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ROBERT J WARDEN can be reached on (571) 272-1281. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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12/03/2004

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